G. JOHNSTON, Laporte Consultants Corp. USA,
King of Prussia, Pennsylvania; and **G. SHAHANI,**
ShureLine Construction, Kenton, Delaware

Consider purpose-driven methods for communicating with engineers

Technology has dramatically transformed communication methods and, more importantly, the ways that engineers share information with colleagues and clients. The traditional office environment is reshaping how professionals work and collaborate. As part of cost-control solutions, more companies are minimizing physical office space; accordingly, employees can work remotely with flexible schedules.

Global workforce changes everything. Project teams are assembled from a diverse workforce. Often, these teams are in different time zones, countries and continents. Such developments introduce new challenges in culture and language. With remote teams and language barriers, communication becomes a critical component to workplace efficiency. In addition to technical and subject-matter knowledge, engineers are expected to possess social skills, effective communication tools and the ability to make strong arguments.[1]

Unfortunately, another skill is overlooked—knowing and using the best communication method to deliver key information and messages. The latest technologies and apps enable fast and easy communication. However, selecting the best method can be overwhelming. Failure to use the best communication channels or methods is a primary psychological barrier for engineers.[2]

Communication choices for engineers. A wide variety of communication methods assist engineers' daily work functions and fall into four main categories: Internet communication, video conferencing, conference calls and meetings. Internet communication includes texting, email, LinkedIn, YouTube, blogs, WhatsApp, Skype and other social media tools/sites.

Email is the main communication method used in the workplace. LinkedIn provides networking opportunities outside of a company. WhatsApp is a great tool for quick international messaging without the associated texting fees. Video conferencing allows a long-distance personal meeting using a computer; it supports face-to-face interactions with attendees. Conference calls are typically held over the phone with large groups that are in different locations. Also, of course, the traditional and best meeting is in-person. Each method was created with specific intentions. However, society and businesses interchange all the communication applications in varying situations. Unfortunately, communication methods are not equal. Selecting the correct tools can improve workplace efficiency and support clear communication with coworkers and clients.

No 'silver bullet' solutions. Among the internet-based communication methods, social media, email, texting and WhatsApp are instantly delivered to the recipient. However, texting and WhatsApp are read sooner by the recipient due to cellphone notifications. When using blogs, YouTube and LinkedIn, the message is quickly posted to the public. However, the time between sending and receiving the message is greater.

Written communication eliminates nonverbal cues, body language and the tone of the message. With all written methods, the interpretation and decoding of the message by the receiver increases. This leads to a greater likelihood of misunderstanding the message; thus, additional follow-up is needed to clarify items—more time is consumed in the total communication process.

Purpose-driven messages. The advantages of using a specific method depends on the communication's purpose. If you are seeking an immediate response and know that the recipient has the information on-hand, then a phone call is better than sending a text. If the communication purpose is recording vital information, then an email is the better solution—the information can be archived for later review. Conversely, if the information is not critical for archiving or urgently needed or if the recipient is not typically sitting at their desk, then a text may be enough.

Solutions for purpose-driven communication. The main communication methods used by engineers include written reports, conference calls, face-to-face meetings, texting, email and LinkedIn. While social media is applied in marketing and sales applications, these techniques are not widely used for routine engineering communication. Always consider the purpose of each communication, and then choose the appropriate method. Other selection criteria include:

- Is this a horizontal communication between departments or vertical communication in a corporate hierarchy?
- Is the purpose to inform, motivate or request action?
- Who should be copied on the communication?
- What are the "political" implications of each communication? Are

negative responses or implications possible? Will others feel excluded if they are left out?

> Written communication eliminates nonverbal cues, body language and the tone of the message. … This leads to a greater likelihood of misunderstanding the message; thus, additional follow-up is needed to clarify items—more time is consumed in the total communication process.

To define the purpose of the message, start each memo, report or meeting with the words: "The purpose of this memo/report/meeting is (insert purpose)." This will direct the communication and drive a clear, concise message.

Written reports. In the engineering field, written reports are the "work horse" method. Work processes include policy, procedures, codes, specifications, proposals, lab reports, inspection reports or safety manuals. No other method can accurately and consistently transfer vast amounts of complex technical information to a large user group. However, under the present fast-paced environment, engineers do not have extra time to conceive, plan or develop such reports with a clear objective. Written reports include too much detail and lack a clearly defined purpose. They are informational products with multiple applications for many users.

Conference calls. In today's wired world, conference calls are very effective. However, language and timing must always be considered when sharing information through conference calls. A key benefit for this option is that participants do not have to be physically present in the office. A good phone and internet connection are necessary, especially if it is a web-enabled conference call. Video conferencing is a further enhancement and enables body-language communication. When used correctly, it resembles a face-to-face meeting. With video conferencing, who is speaking is clearly understood and the dialogue is interactive and allows questions to clarify details.

Face-to-face meetings. The best communication method is face-to-face meetings. It provides an opportunity to share information in real time, with complete body-language expression. However, face-to-face meetings are expensive and time-consuming. Furthermore, it is difficult to organize such meetings with people in different time zones or locations. To optimize a good face-to-face meeting, it is important to have an agenda with time clearly specified. A leader should control the meeting and prevent it from going off on a tangent. In addition, it is essential to solicit active participation and discussion from all attendees. Prior to the meeting, circulate an agenda so attendees can prepare in advance. To keep progress moving forward, a best practice is issuing follow-up notes immediately after the meeting.

Texting. For simple questions, texting is a good solution. Texting is not suitable for transmitting lengthy technical specifications or procedures. In addition, it provides a very quick response and is popular with Generation Z. Always consider the recipient before sending a text message. A peer may be more receptive to a text than your boss.

TABLE 1. Features of different communication methods

	Body language	Verbal tone	Immediacy	Precision	Multiple parties
Face-to-face	X	X	X	X	X
Written report				X	X
Conference call		X			X
Phone call		X	X		
Email				X	X
Text			X	X	

Email. For engineers, the preferred communication method is email. The same information can be shared with multiple parties in a consistent and accurate manner. The information can also be archived for historical purposes. However, emails are sometimes misused (e.g., too many people are copied). Sometimes, the context is not clearly understood, and the email thread is not carefully reviewed, leading to more confusion and inefficiency. Too often, people "reply all" to messages and further clutter the original purpose of the email. Non-verbal cues (body language, appearance and eye contact) are missing in emails; consequently, the message can be misunderstood. A recent article advocates including an emoji to convey emotion within electronic emails.[3]

LinkedIn. The most popular social-networking media for professional engineers is LinkedIn. It enables connecting with professionals and peers who have similar interests and needs. LinkedIn is used to exchange information, set up special interest groups and search for jobs. It is not suitable to discuss technical information within a company or outside groups.

Finding the optimum solution. As listed in **TABLE 1,** a combination of methods can be the most effective solution. For example, it may be a good idea to text people to inquire if they have time for a face-to-face meeting. To help clarify expectations, a phone conversation can be followed with an email detailing the main discussion points and next action steps.

Communication is a two-way experience. Technology and social media continue to adjust how engineers communicate. Several guidelines aid in communication processes and include:

- Responding using the same medium as the original message. If a message comes in an email, then respond in an email. Do not send an overnight letter. Consider if an email should be ‘‘reply" or "reply all." Do not add clutter to the messaging process. Speed is also important. Sometimes, it is better to take time and think over a response before replying. **Remember:** Time provides perspective.

- If a communication contains dimensions and is going to a global audience, then consider including both English and Imperial units.
- If a teleconference is across different time zones, then consider the time in Asia and Europe. Stagger the calls so that it is during normal working hours as much as possible. If the call must be in the evening for some participants, consider rotating the time, so that everyone shares the pain.
- Be precise in defined quantities. For example, in discussing pressure, it is important to specify whether it is gauge or absolute. For clarity, it is important to define if it is maximum, minimum, average, not-to-exceed or relief pressure; all are important details.
- Sensitive conversations are best done in person. For example, a face-to-face conversation with a manager to communicate a two-week notice before departing a position demonstrates respect for your colleagues and the company. It will also gain a person mutual respect from the manager.

The toughest job is clear communication. Communication options span a wide range of forms and channels from written reports to conference calls across the globe, in-person meetings, emails and instantaneous text messaging. As the pace of work continues to increase, engineers are using multiple communication methods throughout the workday.

Choosing the right communication method improves the clarity of messages and workplace efficiency. Communicating a well-defined message allows colleagues and coworkers to move forward on a clear path. The most important factors to consider when selecting the best method include:

- What is the purpose of the communication?
- How complex is the information?
- How soon do you need a response?

Asking these questions narrows the choices. Details matter! Precision in units and the intended audience factor into the decision. Engineers can improve the workplace efficiency when they take the time to communicate with clarity and purpose. **HP**

LITERATURE CITED

[1] Sirbu, A. and C. Alibec, "Effective Professional Communication in Engineering," *Naval Academy Scientific Bulletin*, Volume XX, No. 1, 2017.

[2] Dulevicius, J. and L. Nagineviciene, "Engineering communication," *Global Journal of Engineering Education*, Vol. 9, No. 1, Australia UICEE, 2005.

[3] Morgan, N., "It's Time for Some :) in Your Work Office Email," *Wall Street Journal*, 2019.

GISELLE JOHNSTON is a Process and Validation Engineer at Laporte Consultants. She uses her problem-solving and troubleshooting skills to provide technical design support to clients in the food and beverage and pharmaceutical industries. Ms. Johnston is a leader in safety among her colleagues. She earned a BS degree in chemical engineering from Syracuse University.

GOUTAM SHAHANI is Vice President of sales and marketing at ShureLine Construction. Previously, he was Business Development Manager at Linde Engineering in North America. With more than 30 yr of industry experience, Mr. Shahani specializes in industrial gases for the energy, refining and chemical industries. He holds BS and MS degrees in chemical engineering, as well as an MBA degree.

TARGET GLOBAL OPPORTUNITIES STRATEGICALLY

WITH ONE SINGLE PLATFORM.

EWA provides decision-makers the data necessary to:

- Enable superior business development strategy and execution.
- Facilitate strategic planning and asset optimization.
- Streamline global research and macro-trend analysis

REQUEST A DEMO TODAY!
EWA_SALES@ENERGYWEBATLAS.COM

EWA™
ENERGY WEB ATLAS